



Brussels, June 2007

The EU Member States represented on the LIFE Committee, together with the LIFE Unit, have identified the 22 Best LIFE-Environment projects completed during 2006 and early 2007



Summary - Award Letter:

....your project was evaluated as being one of the "Best LIFE-Environment Projects 2006-2007".

In addition to my personal congratulations, I am pleased to enclose a glass plaque to mark this award, which I hope you will display prominently in your offices.

Environmental progress in Europe depends to a large extent on the widespread use of ideas developed by ground-breaking projects such as yours....

European Commission

The Project - Ultrasound Cleaning - Wastewater Treatment powered by Ultrasound was evaluated as being one of the "Best LIFE-Environment Projects 2006-2007"

Project Objectives

The project "Ultraschallreinigung" intended to develop and test three prototypes for Ultrasonic Resonance Cleaning processes. These would be specifically designed for use in different EU countries and fields of application. The technology should prove to be reliable and superior to the treatment technologies currently in use.

These processes would significantly reduce the organic contaminant load of the waste water to the point where the water could be drained into a body of natural water without causing environmental damage or be used as process water. This would be achieved at reduced levels of energy consumption.

The know-how generated during the project should lead to the optimization of the system and broad market entry in a variety of water treatment industries.

Project Results

The project successfully developed and tested an innovative Ultrasonic Plasma Resonator (UPR) in three applications. It uses ultrasound technology to improve the efficiency of wastewater treatment processes, to expel dissolved solids and eliminate strong odors from excreta products. The project managed to outperform alternative processes whilst at the same time reducing costs and energy requirements – an important positive step for the environment.

The process reduced chemical oxygen demand (COD) and total organic carbon (TOC) in the leakage water of a waste dump by 50%. In the pre-treatment of waste water, it reduced ammonia by 50% with 50-70% less strip air consumption. In disinfecting communal waste water it was able to achieve a decrease of bacteria from factor 100 (log 2) to 1000 (log 3). Further advantages are the complete elimination from the microbiological load of elements such as fungi and bacteria, and a drastic reduction of the nitrogen load.

As a result of the ultrasound treatment, chemical reactions bring the substances more quickly into a liquid phase (sono-chemical reactions). Pollutant charges for which a traditional biological purification plant would require six weeks are now treated within ten minutes. The process also requires less space. Biological plants with a comparable capacity of 5 m³/h require about 1.6 hectare; the UPR, in contrast, requires only 120m² - indoors or outside, including all peripheral devices. The unit itself measures only 2x2x3 meters. The pilot plant's throughput of around 5m³ of water per hour was raised to 8-15m³/h.

The more controlled input of power sources and oxygen in the process, the reduced space requirements and the absence of need for additional pumps or expensive expendables mean that the UPR energy requirements are significantly lower than those of conventional technologies. Similarly, the UPR is an inexpensive device, both in terms of initial outlay and operating costs. The beneficiary estimates that cost savings of 50% can be made in the field of ammonia reduction and treatment of contaminated waste water.

The process is transferable to a wide range of water treatment processes, including the treatment of leachates from landfills and the purification of drinking water. It could even be used in industries such as fish farms and hatcheries where gas also needs to be transferred to liquids. Three companies have already declared their interest in applying or distributing the technology.

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